

DIGITAL LIBRARY WEB DESIGN EFFECTIVENESS: A STUDY

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ABSTRACT

This study analysis the digital library effectiveness based on the concepts of 'Importance of Digital Library'; 'Reading the Text'; Usefulness of Pictures and Graphics; Organization of Pages and Texts; Organization of Menus and Submenus and Other Links to other Important Website in the digital library web pages. Towards analyzing the digital library effective's 520 questionnaires were administrated among the LIS professionals working in 22 State Universities, 28 Deemed Universities and 2 Central Universities of which 372 were responded and response rate is 71.54%. The results of the study were encouraging. The library professionals has realized the importance of digital library and identifies the organization of pages and text, menus and submenus must be helpful the users of the digital library. The study also indicates the importance of other library links.

KEYWORDS: Digital Library Effectiveness, Web Design, Importance of Digital Library, Empirical Study on Digital Library, Images And Pictures, Menus and Submenus

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INTRODUCTION

Today transformation of information from print to digital has been widely accepted. Majority of the library stores digital content and the policy of acquiring, organizing and maintaining of these digital content has also changed considerably. These digital contents are disseminated through web environment. The academic libraries are spending substantial amount towards establishment and delivering the contents to the wider variety of the user. Therefore it is essential to know the effectiveness of delivering of digital content and linking the variety of digital contents. This study identifies the effectiveness of these digital library web designs among the university libraries of Tamil Nadu.

Digital Library

Digital library differs depending upon the research community that is describing it (Nurnberg, et al, 1995). For example:

- From an information retrieval point of view, it is a large database
- For people who work on hypertext technology, it is one particular application of hypertext methods
- For those working in wide-area information delivery, it is an application of the Web and
- For library science, it is another step in the continuing automation of libraries that began over 25 years ago

In fact, a digital library is all of these things. These different research approaches will all add to the development of digital libraries.

Third, confusion arises from the fact that there are many things on the Internet that people are calling "digital libraries," which--from a librarian's point of view--are not. For example:

- For computer scientists and software developers, collections of computer algorithms or software programs are digital libraries.
- For database vendors or commercial document suppliers, their databases and electronic document delivery services and digital libraries.
- For large corporations, a digital library is the document management systems that control their business documents in electronic form.
- For a publisher, it may be an online version of a catalogue.
- And for at least one very large software company, a digital library is the collection of whatever it can buy the rights to, and then charge people for using.

REVIEW OF RELATED LITERATURE

The digital library effectiveness evaluation techniques include formal usability testing; usability inspection; membership expectation; focus groups; questionnaires; analysis of site usage logs; concept-based analysis of surface and structural misfits; and paper prototyping (Blandford et al 2004; Campbell 2001; Kantner and Rosenbaum 1997; Keith et al 2003; Nielsen and Mack 1994; Popp 2001; Ross and Carroll 2002; Snyder 2003). The areas of usability testing for digital libraries have covered breadth of coverage, navigation, functionality, utility, interface, metadata appropriateness, and awareness of library resources.

Oulanov and Pajarillo (2002) also employed a questionnaire as the primary method of usability assessment. The authors conducted a two-phase study to compare usability of text-based and Web-based Web sites. The criteria used were affect, efficiency, control, helpfulness, and adaptability.

The Perception on e-resources, specifically on e-learning materials has been studied based on three conceptual concepts such as "Benefits", "Infrastructure" and "User attitude" among the LIS professionals working in University libraries of Tamil Nadu. (Mohankumar and Gopalakrishnan, 2016)

The effectiveness of digital library has been ascertained based on the concepts such as Views on Digital library, Satisfaction in digital library use, Look and feel of the digital library website, Flexibility and usability of digital library website and Effectiveness in task completion. (Vijayakumar and Gopalakrishnan, 2016).

NEED FOR THE STUDY

Digital libraries are experiencing rapid growth with respect to both the amount and richness of available digital content. Therefore in this study attempt has been made to know the effectiveness of digital library in university libraries of Tamil Nadu.

OBJECTIVES

The objectives of the study are:

- To know whether the LIS professionals working in university libraries in Tamil Nadu realize the importance of digital library.
- To identify the difficulty in reading the text in digital library Web Pages experienced by the professionals of university libraries.
- To know the utility of pictures and graphics in digital library websites.
- To analyse organization of pages and texts.
- To examine the organization of menus and submenus in digital library websites.
- To know the various links to other important websites.

HYPOTHESES

The following hypotheses were formulated for the study based on the objectives:

- There exist differences in the importance of digital library among LIS professionals working in university libraries in Tamil Nadu.
- There exists difficulty in reading the text in digital library among the professionals of university libraries.
- There exist uniform opinions on utility of pictures and graphics in digital library websites
- There exist unanimous opinion on organization of pages and texts of digital library websites.
- LIS professionals express the effectiveness in organization of menus and submenus in digital library websites.
- LIS professionals satisfied over various links to other important websites in the digital library websites.

SAMPLE

The questionnaire was administrated among the LIS professionals working in 22 State Universities, 28 Deemed Universities and 2 Central Universities in Tamil Nadu. A total of 520 questionnaires were distributed. Out of which 372 were responded and response rate is 71.54%.

Table 1: Distribution of Questionnaire

S. No	Type of University	No. of Universities	Questionnaire Distributed	Responses Received	Percent	Cumulative Percent
1	State University	22	220	148	39.8	39.8
2	Deemed University	28	280	208	55.9	95.7
3	Central university	2	20	16	4.3	100.0
	Total	52	520	372	100.0	

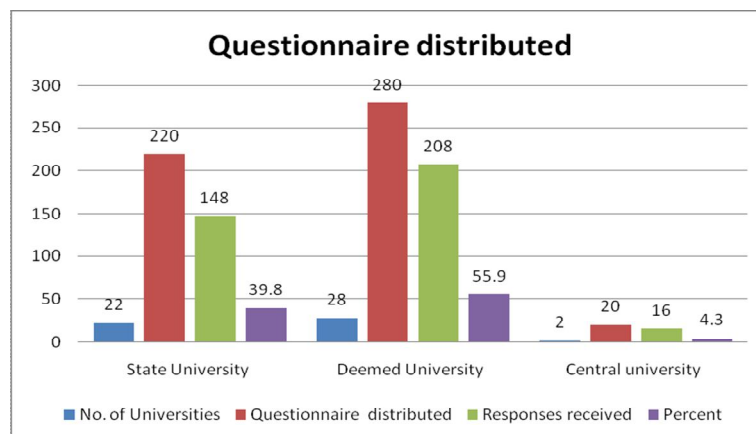


Figure 1: Distribution of Questionnaire

Demographic Details

The demographic details of the respondents of campus wise were shown in Table 2.

Table 2: Demographic Details

S. No	Description	Respondents	
Type of University			
1	State University	148	39.8
2	Deemed University	208	55.9
3	Central university	16	4.3
Domain			
1	Arts	130	34.9
2	Engineering	65	17.5
3	Medical	39	10.5
4	Multi	82	22.0
5	Others	56	15.1
Status			
1	Superior	39	10.5
2	Subordinate	333	89.5
Gender			
1	Male	246	66.1
2	Female	126	33.9
Age			
1	21-30	30	8.1
2	31-40	45	12.1
3	41-50	284	76.3
4	above 50	13	3.5
Designation			
1	Librarian	40	10.8
2	Asst. Librarian	302	81.2
3	Others	30	8.1
Experience			
1	<5	45	12.1
2	6-10	85	22.8
3	11-15	97	26.1
4	16-20	106	28.5
5	20 and above	39	10.5
Qualification			
1	BLIS	13	3.5

Table 2: Contd.,			
2	MLIS	125	33.6
3	M. Phil	121	32.5
4	Ph. D	113	30.4
Overall			
	Total	372	100.0

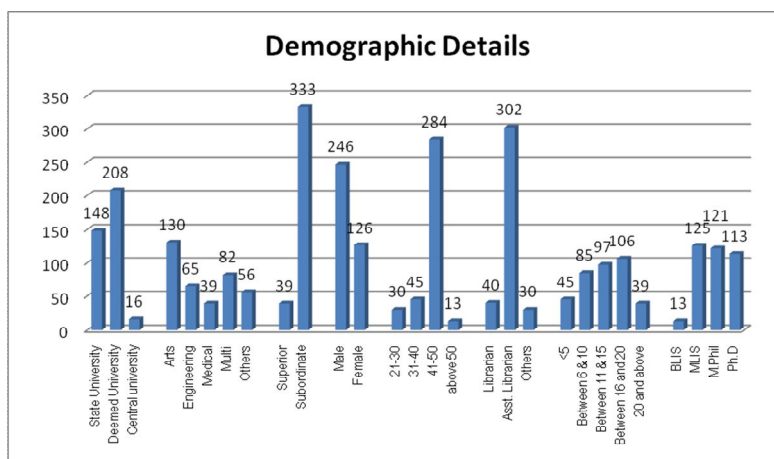


Figure 2: Demographic Details of Respondents

Among 372 respondents, 246 (66.1%) were male and 126 (33.9%) were female. Similarly there are 40(10.8%) librarians. It is followed by 302 (81.2%) were Assistant Librarian and 30(8.1%) were others. Among 372, 39 (10.5%) were superiors and the remaining 333 (89.5%) were subordinate. There are 148 (39.8%) belongs to state university. It is followed by 208 (55.9%) deemed university and 16 (4.3%) belongs to central university. 130 (34.9%) were Arts domain LIS professionals. It is followed by multi domain (82, 22.0%); Engineering (65, 17.5%); other domain (56, 15.1%) and medical (39,10.5%). 30 (8.1) belongs to the age group of 21-30 years. It is followed by 45 (12.1) between 31 and 40 years; 284 (76.3%) between 41 and 50 years and 13 (3.5%) above 50 years. Out of 372, 113 (30.4%) respondents were Ph.D. holders. It is followed by 121 (32.5%) M. Phil holders, 125(33.6%) MLIS and remaining 13 (3.5%) were BLIS.

Data Analysis

Digital library effectiveness has been analysed based on the six concepts such as

- Importance of Digital Library
- Reading The Text in Digital Library Web Pages
- Usefulness of Pictures and Graphics
- Organization of Pages and Texts
- Organization of Menus and Submenus
- Other Links to other Important Website

Each variable has different scale. The Mean and Standard Deviation were calculated based on scale of the variable in order to identify the overview of the parameter. The analysis were further been extended to Type and Domain of the University.

Importance of Digital Library

The importance's of digital library have been ascertained on three variables in a five point scale such as *strongly disagree*, *disagree*, *no opinion*, *agree*, and *strongly agree* from the respondents. The mean and standard deviation were calculated. The ranks were ascertained based on mean and standard deviation. The opinion, mean, standard deviation and rank were shown in Table 3.

Table 3: Importance of Digital Library

S. No	Description	Strongly Disagree		Disagree		No Opinion		Agree		Strongly Agree		Mean	Std	Rank
1	Digital library is quite important	0	.0%	0	.0%	108	29.0%	216	58.1%	48	12.9%	3.84	.628	1
2	Digital library is not updatable	48	12.9%	252	67.7%	72	19.4%	0	.0%	0	.0%	2.06	.565	3
3	Digital library is not a formality	0	.0%	84	22.6%	72	19.4%	216	58.1%	0	.0%	3.35	.826	2

71% of respondents indicated their views for the variable “digital library is quite important” has either agreed and strongly agree. 108 (29%) respondents have not given any opinion. None of them expressed disagree or strongly disagree. The mean value for the variable digital library is quite important works out to 3.84 which indicates that the respondents opinion agreed for the statement. None of them agreed or strongly agree for the variable digital library is not updatable. 81.6% of respondents disagree or strongly disagree for the variable that digital library is not updatable. Only 72 (19.4%) has not given any opinion on the above variable. The mean value works out to 2.06 which indicates that the respondents disagree to the statement that digital library is not updatable. Therefore it can be inferred that digital library is updatable. 216 (58.1%) respondent has agreed that digital library is not a formality and 84 (22.6%) has responded disagree. 19.4% have not given any opinion in this regard. The order of preference was Digital library is quite important, digital library is not a formality and digital library is not updatable.

It can be inferred that Digital library is quite important and updatable. Further it can be inferred that digital library is not a formality.

The study has been extended to type of university. The mean and standard deviation were calculated based on the respondents' opinion. The ranks were assigned based on mean and standard deviation. The mean, standard deviation and rank for types of universities were shown in Table 4.

Table 4: Importance's of Digital Library Vs Type of University

S. No	Description	State University			Deemed University			Central University		
		Mean	Std	Rank	Mean	Std	Rank	Mean	Std	Rank
1	Digital library is quite important	3.84	.629	1	3.83	.626	1	3.94	.680	1
2	Digital library is not updatable	2.07	.573	3	2.06	.565	3	2.00	.516	3
3	Digital library is a formality	3.38	.820	2	3.35	.826	2	3.25	.931	2

There exists synchronized opinion among the respondents irrespective of type of the university. The order of preference was Digital library is quite important, digital library is not a formality and digital library is not updatable. There is no much deviation in the mean value between the type of university and overall mean value. The difference in mean value ranges between 0.01 and 0.10.

The study has been extended to type domain of university. The mean and standard deviation were calculated based on the respondents' opinion. The ranks were assigned based on mean and standard deviation. The mean, standard deviation and rank for types of universities were shown in Table 5.

Table 5: Importance's of Digital Library Vs Domain of University

S. No	Description	Arts			Engineering			Medical			Multi			Others		
		Mean	Std	Rank	Mean	Std	Rank	Mean	Std	Rank	Mean	Std	Rank	Mean	Std	Rank
1	Digital library is quite important	3.90	.645	1	3.83	.627	1	3.79	.656	1	3.79	.603	1	3.80	.616	1
2	Digital library is not updatable	2.09	.577	3	2.06	.583	3	2.05	.560	3	2.01	.533	3	2.09	.581	3
3	Digital library is a formality	3.45	.817	2	3.34	.834	2	3.31	.863	2	3.26	.829	2	3.34	.815	2

Synchronized opinion can also be seen among the respondents irrespective of domain of the university. The order of preference was Digital library is quite important, digital library is not a formality and digital library is not updatable. There is no much deviation in the mean value between the type of university and overall mean value. The difference in mean value ranges between ± 0.01 and ± 0.10 .

The mean values of the variables of both type of university and domain of the university with overall mean value and the same has been shown in Table 6.

Table 6: Importance of Digital Library – Mean Value Comparison

S. No	Description	Overall	State	Deemed	Central	Arts	Engg	Medical	Multi	Others
1	Digital library is quite important	3.84	3.84	3.83	3.94	3.90	3.83	3.79	3.79	3.80
2	Digital library is not updatable	2.06	2.07	2.06	2.00	2.09	2.06	2.05	2.01	2.09
3	Digital library is a formality	3.35	3.38	3.35	3.25	3.45	3.34	3.31	3.26	3.34

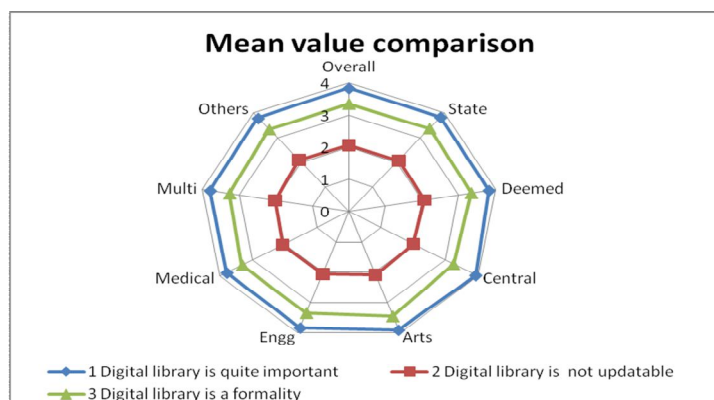


Figure 3: Comparison of the Mean Value

It can be seen from Table 6 and Figure 3 that the existence of synchronized opinion on all the three variables. The differences in mean value is also very less and seems to be negligible.

Reading the Text in Digital Library Web Pages

The opinion on reading the text in digital library web pages has been obtained from the respondents on the five point scale such as very difficult, difficult, no comments, easy and very easy. The opinions thus obtained the values were shown in Table 7.

Table 7: Difficulty in Reading the Text in Digital Library Web Pages

S. No.	Description	Very Difficult	Difficult	No Comments	Easy	Very Easy	Mean	Std.	Rank
Overall									
1	Difficulty in reading the text in digital library web pages	0 (0.0)	0 (0.0)	60 (16.1)	264 (71.0)	48 (12.9)	3.97	.539	-
Type of University									
1	State University	0 (0.0)	0 (0.0)	23 (15.5)	106 (71.6)	19 (12.8)	3.97	.534	1
2	Deemed University	0 (0.0)	0 (0.0)	34 (16.3)	147 (70.7)	27 (13.0)	3.97	.542	2
3	Central University	0 (0.0)	0 (0.0)	3 (18.8)	11 (68.8)	2 (12.5)	3.94	.574	3
Domain of the University									
1	Arts	0 (0.0)	0 (0.0)	20 (15.4)	95 (73.1)	15 (11.5)	3.96	.519	4
2	Engineering	0 (0.0)	0 (0.0)	11 (16.9)	48 (73.8)	6 (9.2)	3.92	.510	5
3	Medical	0 (0.0)	0 (0.0)	7 (17.9)	26 (66.7)	6 (15.4)	3.97	.584	3
4	Multi	0 (0.0)	0 (0.0)	14 (17.1)	55 (67.1)	13 (15.9)	3.99	.577	2
5	Others	0 (0.0)	0 (0.0)	8 (14.3)	40 (71.4)	8 (14.3)	4.00	.539	1

It can be seen from the Table 7, 48 (12.9%) are indicated the difficulty in reading the text in digital library web pages is very easy and 216 (58.1%) are indicated easy. 60 (16.1%) respondents are stated that the difficulty in reading the text in digital library web pages has not given any comments. No one indicated that in reading the text in digital library web pages were stated either difficult or very difficult. The mean value thus calculated and works out to 3.97 which indicated that reading the text in digital library web pages is easy. The standard deviation works out to 0.539 which indicated there is no significant deviation on opinion among the respondents.

In the case of type of universities the mean value ranges between 3.94 and 3.97. Central university digital library are ranked first. It is followed by State and Deemed universities. The mean value of central universities are more than the overall mean value where as in the case of state university the mean value was identical of overall mean value. However the mean value of Deemed University differs only 0.01 with overall mean value. Therefore it can be inferred that the satisfaction in digital library us difficulty in reading the text in digital library web pages irrespective of type of university were satisfactory.

In the case of domain of the universities the mean value ranges between 3.92 and 4.00. Other domain universities are ranked first. It is followed by Multi domain, Medical and Arts and Science. Least preference was given by engineering domain universities. The mean value of Other domain universities and Multi domain are more than the overall mean value. The overall mean value and medical domain value gets synchronized where as in the case of Engineering, and Arts and

Science it differs only 0.05 with overall mean value. Therefore it can be inferred that the *Reading the text in digital library web pages* irrespective of domain of the university were easy.

Usefulness of Pictures and Graphics

The opinion on *Usefulness of Pictures and Graphics* in digital library web pages has been obtained from the respondents on the five point scale such as unfitting, not useful, no comments, useful and very useful. The opinions thus obtained the values were shown in Table 8 with mean, standard deviation and rank.

Table 8: Usefulness of Pictures and Graphics

S. No.	Description	Unfitting	Not Useful	No Comments	Useful	Very Useful	Mean	Std.	Rank
Overall									
1	Pictures and Graphics are Useful Pages	0 (0.0)	0 (0.0)	84 (22.6)	72 (19.4)	216 (58.1)	4.35	.826	-
Type of University									
1	State University	0 (0.0)	0 (0.0)	32 (21.6)	28 (18.9)	88 (59.5)	4.38	.820	1
2	Deemed University	0 (0.0)	0 (0.0)	48 (23.1)	40 (19.2)	120 (57.7)	4.35	.831	2
3	Central University	0 (0.0)	0 (0.0)	4 (25.0)	4 (25.0)	8 (50.0)	4.25	.856	3
Domain of the University									
1	Arts	0 (0.0)	0 (0.0)	26 (20.0)	26 (20.0)	78 (60.0)	4.40	.803	2
2	Engineering	0 (0.0)	0 (0.0)	15 (23.1)	13 (20.0)	37 (56.9)	4.34	.834	3
3	Medical	0 (0.0)	0 (0.0)	11 (28.2)	6 (15.4)	22 (56.4)	4.28	.887	5
4	Multi	0 (0.0)	0 (0.0)	21 (25.6)	16 (19.5)	45 (54.9)	4.29	.853	4
5	Others	0 (0.0)	0 (0.0)	11 (19.6)	11 (19.6)	34 (60.7)	4.41	.804	1

It can be seen from the Table 8, 216 (58.1%) are indicted the Usefulness of Pictures and Graphics in digital library web pages is very useful and 72 (19.4%) are indicted useful. 84 (22.6%) respondents are stated that the usefulness of pictures and graphics in digital library web pages has not given any comments. No one indicated that the usefulness of pictures and graphics in digital library web pages were stated either difficult or very difficult. The mean value thus calculated and works out to 4.35 which indicated that reading the text in digital library web pages ranges between useful and very useful. The standard deviation works out to 0.826 which indicated there is no significant deviation on opinion among the respondents.

In the case of type of universities the mean value ranges between 4.25 and 4.38 which indicated that Usefulness of Pictures and Graphics in digital library web pages ranges between useful and very useful. State university digital library are ranked first. It is followed by Deemed universities and Central University. The mean value of state universities are more than the overall mean value where as in the case of Deemed University the mean value was identical of overall mean value. However the mean value of Central University differs only 0.10 with overall mean value. Therefore it can be inferred that the reading the text in digital library web pages irrespective of type of university were very useful.

In the case of domain of the universities the mean value ranges between 4.28 and 4.41 which indicated that Usefulness of Pictures and Graphics in digital library web pages ranges between useful and very useful. Other domain universities are ranked first. It is followed by Arts and Science, Engineering and Multi domain universities. Least preference was given by Medical domain universities. The mean value of other domain universities and Arts and Science domain are more than the overall mean value. In the case of Engineering, Medical and Multi domain universities the mean value differs only by 0.06 with overall mean value. Therefore it can be inferred that the Usefulness of Pictures and Graphics in digital library web pages irrespective of domain of the university were very useful. In general the usefulness of pictures and graphics were very useful irrespective of type and domain of the universities.

Organization of Pages and Texts

The opinion on Organization of pages and texts in digital library web pages has been obtained from the respondents on the five point scale such as very poor, poor, no comments, good and very good. The opinions thus obtained were shown in Table 9 with mean, standard deviation and rank.

Table 9: Organization of Pages and Texts

S. No.	Description	Very Poor	Poor	No Comments	Good	Very Good	Mean	Std.	Rank
Overall									
1	Organization of pages and texts	0 (0.0)	0 (0.0)	48 (12.9)	252 (67.7)	72 (19.4)	4.06	.565	-
Type of University									
1	State University	0 (0.0)	0 (0.0)	19 (12.8)	101 (68.2)	28 (18.9)	4.06	.562	2
2	Deemed University	0 (0.0)	0 (0.0)	28 (13.5)	139 (66.8)	41 (19.7)	4.06	.574	3
3	Central University	0 (0.0)	0 (0.0)	1 (6.3)	12 (75.0)	3 (18.8)	4.13	.500	1
Domain of the University									
1	Arts	0 (0.0)	0 (0.0)	12 (9.2)	97 (74.6)	21 (16.2)	4.07	.501	2
2	Engineering	0 (0.0)	0 (0.0)	10 (15.4)	41 (63.1)	14 (21.5)	4.06	.609	3
3	Medical	0 (0.0)	0 (0.0)	5 (12.8)	26 (66.7)	8 (20.5)	4.08	.580	1
4	Multi	0 (0.0)	0 (0.0)	13 (15.9)	51 (62.2)	18 (22.0)	4.06	.616	4
5	Others	0 (0.0)	0 (0.0)	8 (14.3)	37 (66.1)	11 (19.6)	4.05	.585	5

It can be seen from the Table 9, 72 (19.4%) are indicted the organization of pages and texts in digital library web pages is very good and 252 (67.7%) are indicted good. 48 (12.9%) respondents are stated that the organization of pages and texts in digital library web pages has not given any comments. No one indicated that the organization of pages and texts in digital library web pages were stated either difficult or very difficult. The mean value thus calculated and works out to 4.06 which indicated that organization of pages and texts in digital library web pages is useful. The standard deviation works out to 0.565 which indicated there is no significant deviation on opinion among the respondents.

In the case of type of universities the mean value ranges between 4.06 and 4.13 which indicated that Organization of pages and texts in digital library web pages ranges between good and very good. In this regard Central university digital library are ranked first. It is followed by State universities and Deemed University. The mean value of Central universities

are more than the overall mean value where as in the case of Deemed University and State University the mean value was identical of overall mean value. Therefore it can be inferred that the Organization of pages and texts in digital library web pages text in digital library web pages irrespective of type of university were good.

In the case of domain of the universities the mean value ranges between 4.05 and 4.08 which indicated that Organization of pages and texts in digital library web pages ranges between good and very good. Medical domain universities are ranked first. It is followed by Arts and Science, Engineering and Multi domain universities. Least preference was given by other domain universities. The mean value of medical domain universities and Arts and Science domain are more than the overall mean value. In the case of Engineering and Medical universities the mean value were identical with overall mean value where as in the case of other domain universities differs only by 0.01 with overall mean value. Therefore it can be inferred that the Organization of pages and texts in digital library web pages irrespective of domain of the university were very useful. In general the Organization of pages and texts in digital library web pages were very useful irrespective of type and domain of the universities.

Organization of Menus and Submenus

The opinion on Organization of menus and submenus in digital library web pages has been obtained from the respondents on the five point scale such as very poor, poor, no comments, good and very good. The opinions thus obtained were shown in Table 10 with mean, standard deviation and rank.

Table 10: Organization of Menus and Submenus

S. No.	Description	Very Poor	Poor	No Comments	Good	Very Good	Mean	Std.	Rank
Overall									
1	Organization of menus and submenus	0 (0.0)	12 (3.2)	60 (16.1)	216 (58.1)	84 (22.6)	4.00	.719	-
Type of University									
1	State University	0 (0.0)	5 (3.4)	23 (15.5)	87 (58.8)	33 (22.3)	4.00	.719	2
2	Deemed University	0 (0.0)	7 (3.4)	34 (16.3)	119 (57.2)	48 (23.1)	4.00	.729	3
3	Central University	0 (0.0)	0 (0.0)	3 (18.8)	10 (62.5)	3 (18.8)	4.00	.632	1
Domain of the University									
1	Arts	0 (0.0)	3 (2.3)	20 (15.4)	79 (60.8)	28 (21.5)	4.02	.682	2
2	Engineering	0 (0.0)	3 (4.6)	11 (16.9)	37 (56.9)	14 (21.5)	3.95	.759	5
3	Medical	0 (0.0)	2 (5.1)	4 (10.3)	23 (59.0)	10 (25.6)	4.05	.759	1
4	Multi	0 (0.0)	2 (2.4)	15 (18.3)	45 (54.9)	20 (24.4)	4.01	.729	3
5	Others	0 (0.0)	2 (3.6)	10 (17.9)	32 (57.1)	12 (21.4)	3.96	.738	4

It can be seen from the Table 10, 84 (22.6%) are indicted the organization of menus and submenus in digital library web pages is very good and 216 (58.1%) are indicted good. 60 (16.1%) respondents are stated that the organization of menus and submenus in digital library web pages has not given any comments. Only 12 (3.2%) indicated that organization of menus and submenus in digital library were poor. No one indicated that the organization of menus and submenus in digital library web pages were stated very poor. The mean value thus calculated and works out to 4.00 which

indicated that organization of pages and texts in digital library web pages is good. The standard deviation works out to 0.719 which indicated there is no significant deviation on opinion among the respondents.

In the case of type of universities the mean value are identical i.e. 4.00 which indicated that Organization of menus and submenus in digital library web pages are good. Since the mean values are identical, the ranks were assigned based on standard deviation which shows the deviation in opinion. Least standard deviation indicates low deviation in opinion among the respondents. In this regard Central university digital library are ranked first. It is followed by State universities and Deemed University. Therefore it can be inferred that the Organization of menus and submenus in digital library web pages web pages irrespective of type of university were good.

In the case of domain of the universities the mean value ranges between 3.95 and 4.05 which indicated that Organization of menus and submenus in digital library web pages ranges between good and very good. Medical domain universities are ranked first. It is followed by Arts and Science, Multi and other domain universities. Least preference was given by engineering domain universities. The mean value of medical domain universities, Arts and Science and multi domain are more than the overall mean value. In the case of Engineering and Medical universities the mean value were differs only by 0.05 with overall mean value. Therefore it can be inferred that the Organization of menus and submenus in digital library web pages irrespective of domain of the university were very useful. In general the Organization of menus and submenus in digital library web pages were good irrespective of type and domain of the universities.

Links to Other Important Website

The opinion on Links to other important website in digital library web pages has been obtained from the respondents on the five point scale such as very poor, poor, no comments, good and very good. The opinions thus obtained were shown in Table 11 with mean, standard deviation and rank.

Table 11: Other Links to Other Important Website

S. No.	Description	Very Poor	Poor	No Comments	Good	Very Good	Mean	Std.	Rank
Overall									
1	Other links to other important website	0 (0.0)	12 (3.2)	60 (16.1)	48 (12.9)	252 (67.7)	4.45	.875	-
Type of University									
1	State University	0 (0.0)	5 (3.4)	25 (16.9)	18 (12.2)	100 (67.6)	4.44	.890	3
2	Deemed University	0 (0.0)	7 (3.4)	34 (16.3)	27 (13.0)	140 (67.3)	4.44	.883	2
3	Central University	0 (0.0)	0 (0.0)	1 (6.3)	3 (18.8)	12 (75.0)	4.69	.602	1
Domain of the University									
1	Arts	0 (0.0)	3 (2.3)	22 (16.9)	13 (10.0)	92 (70.8)	4.49	.856	1
2	Engineering	0 (0.0)	3 (4.6)	10 (15.4)	9 (13.8)	43 (66.2)	4.42	.917	4
3	Medical	0 (0.0)	0 (0.0)	7 (17.9)	7 (17.9)	25 (64.1)	4.46	.790	2
4	Multi	0 (0.0)	3 (3.7)	11 (13.4)	13 (15.9)	55 (67.1)	4.46	.863	3
5	Others	0 (0.0)	3 (5.4)	10 (17.9)	6 (10.7)	37 (66.1)	4.37	.964	5

It can be seen from the Table 11, 252 (67.7%) are indicted the Links to other important website in digital library web pages is very good and 48 (12.9%) are indicted good. 60 (16.1%) respondents are stated that the organization of menus and submenus in digital library web pages has not given any comments. Only 12 (3.2%) indicated that links to other important website in digital library web pages were poor. No one indicated that the Links to other important website in digital library web pages were stated very poor. The mean value thus calculated and works out to 4.45 which indicated that Links to other important website in digital library web pages is good. The standard deviation works out to 0.875 which indicated there is no significant deviation on opinion among the respondents.

In the case of type of universities the mean value ranges between 4.44 and 4.69 which indicated that Links to other important website in digital library web pages are good. Further the mean value of state universities and deemed universities were identical i.e.4.44 and whereas the mean value of central universities works out to 4.69 which indicates that the Links to other important website in digital library web pages were very good. The standard deviation ranges between 0.602 and 0.890 indicates there has been no deviation in the respondents opinion. Central university digital library are ranked first. It is followed by Deemed universities and State University. Therefore it can be inferred that the Links to other important website in digital library web pages in digital library web pages irrespective of type of university were good.

In the case of domain of the universities the mean value ranges between 4.37 and 4.49 which indicated that Links to other important website in digital library web pages ranges between good and very good. Arts and Science domain universities are ranked first. It is followed by Medical, Multi and engineering domain universities. Least preference was given by other domain universities. The mean value of Arts and Science, Medical and multi domain are more than the overall mean value. In the case of Engineering and other domain universities the mean value were differs only by 0.08 with overall mean value. Therefore it can be inferred that the Links to other important website in digital library web pages irrespective of domain of the university were very useful. In general the Links to other important website in digital library web pages were good irrespective of type and domain of the universities.

FINDINGS

- A total of 520 questionnaires were administrated among the LIS professionals working in 22 State Universities, 28 Deemed Universities and 2 Central Universities in Tamil Nadu of which 372 were responded and response rate is 71.54%.
- Among 372 respondents, 246 (66.1%) were male and 126 (33.9%) were female. Similarly in this 372 there are 40 (10.8%) librarians, 302 (81.2%) Assistant Librarian and 30(8.1%) others library professionals. Similarly there are 39 (10.5%) superiors and the remaining 333 (89.5%) were subordinate. There are 148 (39.8%) belongs to state university, 208 (55.9%) belongs to deemed university and 16 (4.3%) belongs to central university. 130 (34.9%) were Arts domain LIS professionals. It is followed by multi domain (82, 22.0%); Engineering (65, 17.5%); other domain (56, 15.1%) and medical (39, 10.5%). 30 (8.1) belongs to the age group of 21-30 years. It is followed by 45 (12.1) between 31 and 40 years; 284 (76.3%) between 41 and 50 years and 13 (3.5%) above 50 years. Out of 372, 113 (30.4%) respondents were Ph.D. holders. It is followed by 121 (32.5%) M.Phil holders, 125(33.6%) MLIS and remaining 13 (3.5%) were BLIS.

- Digital library effectiveness has been analyzed based on the six concepts such as Importance of Digital Library, Reading the Text in Digital Library Web Pages, Usefulness of Pictures and Graphics, Organization of Pages and Texts, Organization of Menus and Submenus and Other Links to other Important Website. Each variable has different scale. The Mean and Standard Deviation were calculated based on scale of the variable in order to identify the overview of the parameter. The analysis were further been extended to Type and Domain of the University.
- The importance of the digital library has been analyzed based on three variables. Synchronized opinion can be seen among the respondents on all variables irrespective of domain of the university. The order of preference was Digital library is quite important, digital library is not a formality and digital library is updatable.
- Reading the text in digital library web pages irrespective of type and domain of the university were easy
- The Usefulness of Pictures and Graphics in digital library web pages irrespective of domain and type of the university were very useful.
- Organization of pages and texts in digital library web pages were very useful irrespective of type and domain of the universities.
- The Organization of menus and submenus in digital library web pages were good irrespective of type and domain of the universities.
- The Links to other important website in digital library web pages were good irrespective of type and domain of the universities.

CONCLUSIONS

This study analysis the digital library effectiveness based on the concepts of ‘Importance of Digital Library’; ‘Reading the Text’; Usefulness of Pictures and Graphics; Organization of Pages and Texts; Organization of Menus and Submenus and Other Links to other Important Website in the digital library web pages. The university library professionals have realized the importance of the digital library. Digital libraries are quite important and not a formality in the university library. They realize the importance of updatable digital library. The LIS professionals indicated that reading the text in digital library must be easy. The organization of pages and text; use of pictures and graphics not only useful but also it has to enhance and exhibit the expression of the text. The effectiveness has further depends on navigation in the digital library web pages and links to other important digital library websites. Menus and submenus will enhance the utility and effectiveness and ease the navigation within the digital library and other digital library web sites.

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